Investing in Agriculture to End Hunger and Extreme Poverty

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Agriculture – a driving force in human development for millennia

- food, fiber, fuel, medicine, and essential consumables
- surpluses and trade led to income, specialization and services
- structural transformation to manufacturing and services

Outline

- The Case for Investing in Agriculture
- Asian Green Revolution
- African Green Revolution
- Focus Topics in Agriculture
  - Climate Change
  - Input subsidies
- Outlook for Global Food Security

The Case for Investing in Agriculture to End Hunger and Extreme Poverty

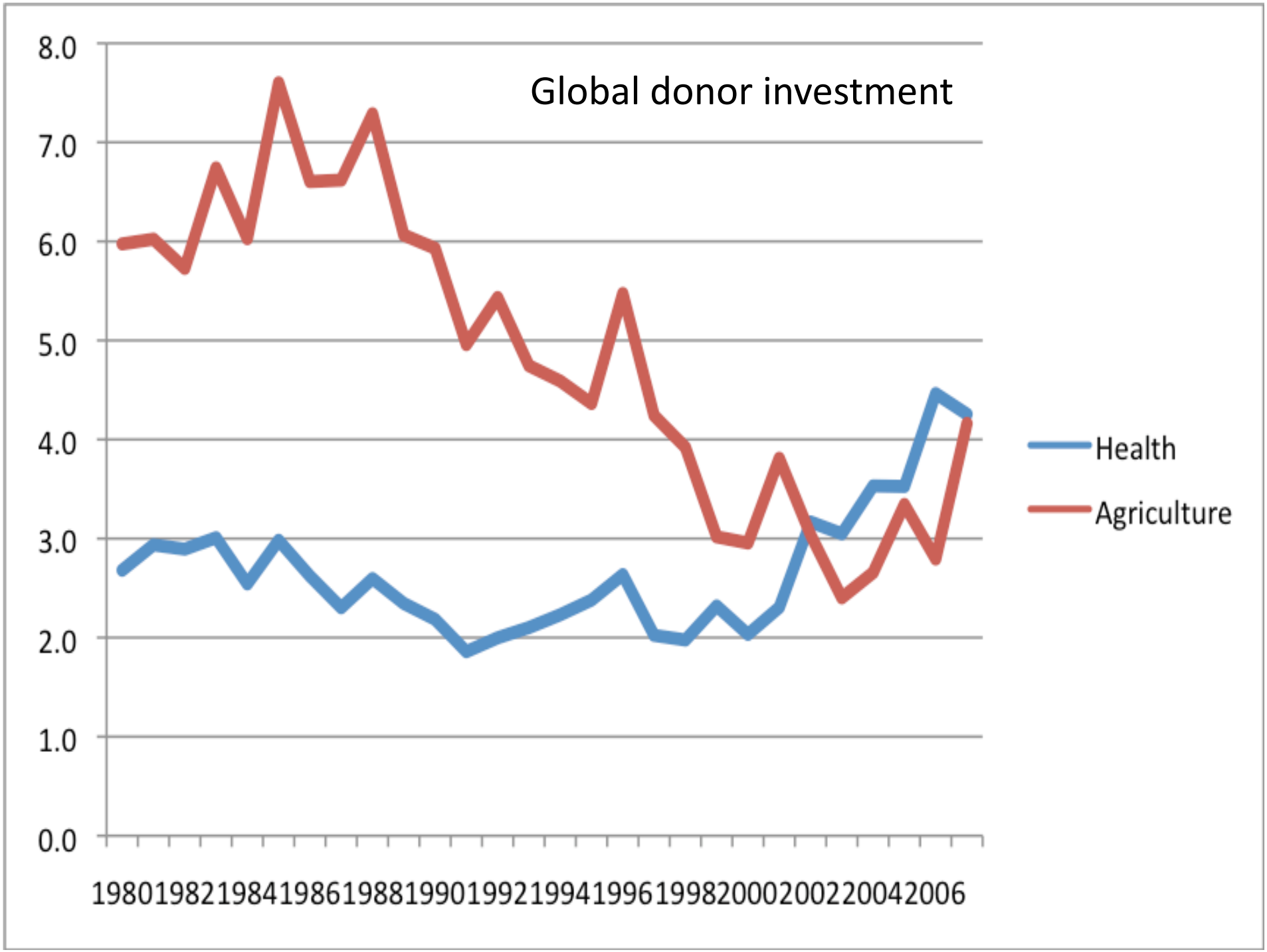
- Of 5.5 billion people living in developing countries, 3 billion live in rural areas
- 500 million small farms in developing countries, supporting 2 billion people
- 75% of the world's poor are rural
- Rural poverty rates (29 percent on average) are substantially higher than urban rates (13 percent)
- Most of the rural poor depend on agriculture for livelihoods and food

The poor are mainly rural and they are mostly small-scale farmers ("smallholders")

Can we be optimistic?

- Knowledge now exists in improve agricultural productivity in most settings
- IRR of 43% from 700 agriculture R & D projects
- Urbanization and increased trade opening opportunities for expanding agricultural output: demand for cereals and meat will increase by 50% and 85% respectively by 2030
- Multiplier effects of agricultural productivity improvement are well established

…but are these factors reflected in public investment?


Global donor investment
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Health
Agriculture

Harsh Reality of Agricultural Investment

- Decline in rural poverty mainly in East and Southeast Asia; but in South Asia and Africa, rural poverty has worsened
- Hungry people now exceeds 1 billion
- Food prices still 25% above pre-crisis levels in most poor countries
- Poor countries spend just 4% of their national budgets on agriculture
- Donor allocations to agriculture down from 18% in 1979 to 4.6% in 2007

So why invest in agriculture?

- Large size of rural poor sub-sector: 2 billion people living on smallholdings
- Past successes illustrate potential economic impact: agriculture as precursor of economic development: Europe, Japan, Latin America, Asia
- Impacts on food security, incomes, and social indicators (health, education)
- Agricultural countries, especially with low income, are clearly under-investing

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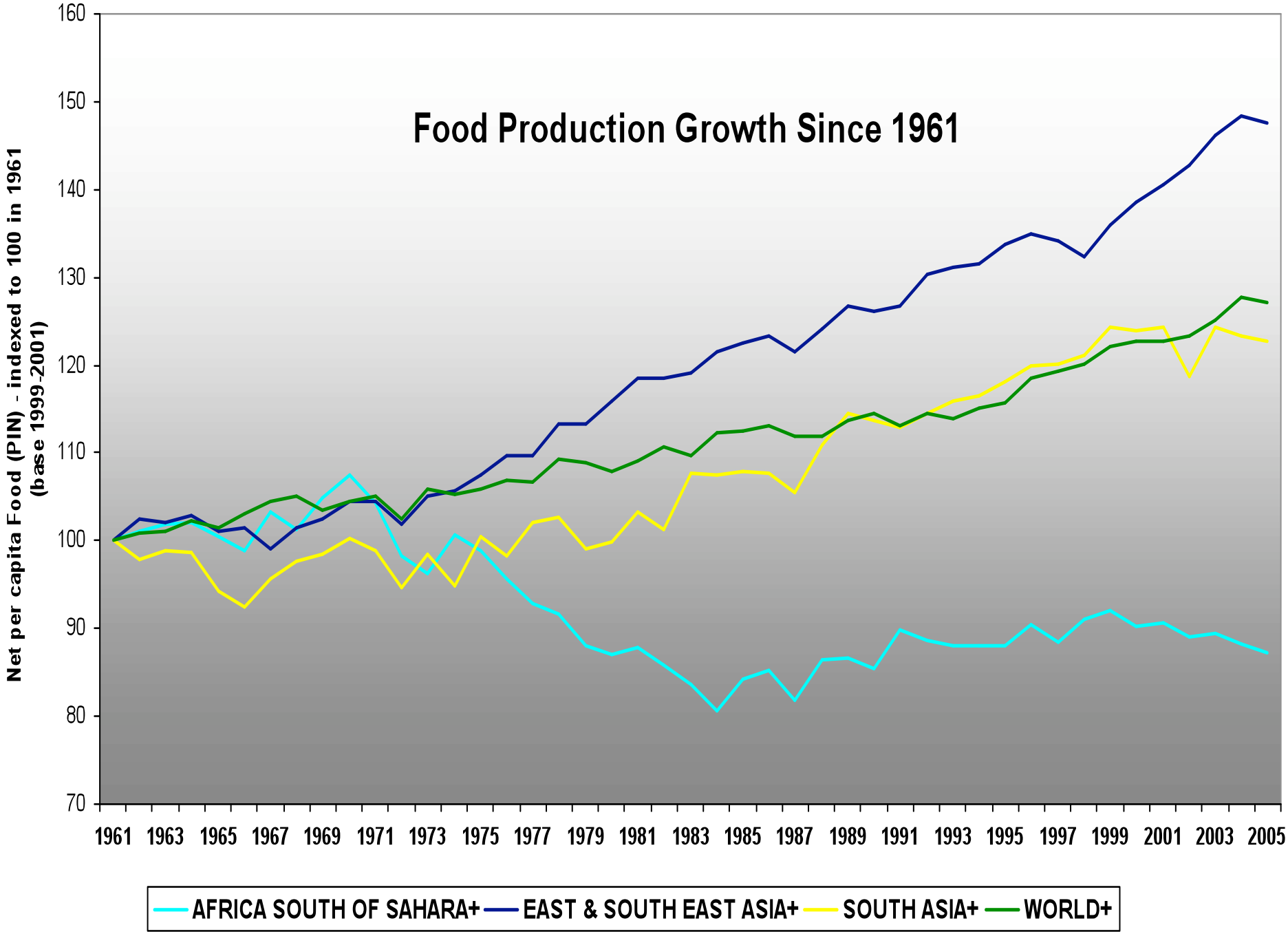
Food Production Growth Since 1961
Net per capita Food (PIN) - indexed to 100 in 1961 (base 1999-2001)
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AFRICA SOUTH OF SAHARA+
EAST & SOUTH EAST ASIA+
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Background to the Asian Green Revolution

- Population's food needs were met by land area expansion, but there are limits to growth
- First half of 20th century advances in science and technology
- English wheat: 0.5 to 2.0 t/ha took 1,000 years; 2.0 to 6.0 t/ha took 40 years
- But progress slow in tropics: colonial neglect of food crops
- Mid-1960s, hunger and malnutrition widespread in tropics

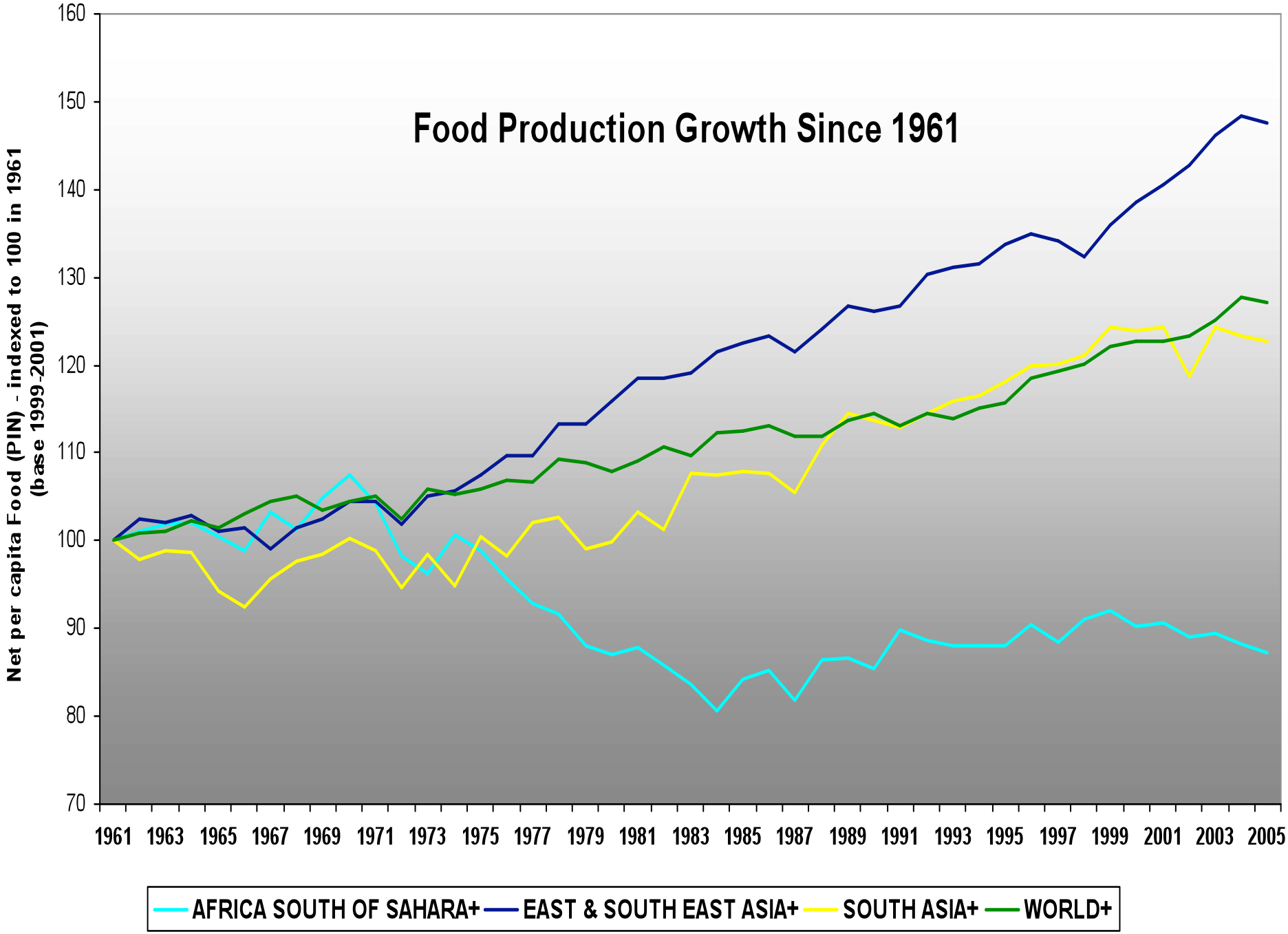
"The scale, severity and duration of the world food problem are so great that a massive, long-range, innovative effort unprecedented in human history will be required to master it."

U.S. President's Science Advisory Committee, 1967

- In 1940s and 1950s Rockefeller and Ford Foundations took the lead in establishing research to adapt science to tropics
- International Rice Research Institute (IRRI) and International Maize and Wheat Research Institute (CIMMYT) established in 1960 and 1962
- CGIAR

Science Strategy behind the Asian Green Revolution

- Focus on major food crops: rice comprises 23% of consumed calories, wheat 17%, and maize 10%.
- New plant architecture and physiology for rice and wheat: change in harvest index
- Short stiff straw, responsive to fertilizer, earlier maturing to allow multiple cropping
- Yield stability and better eating quality were added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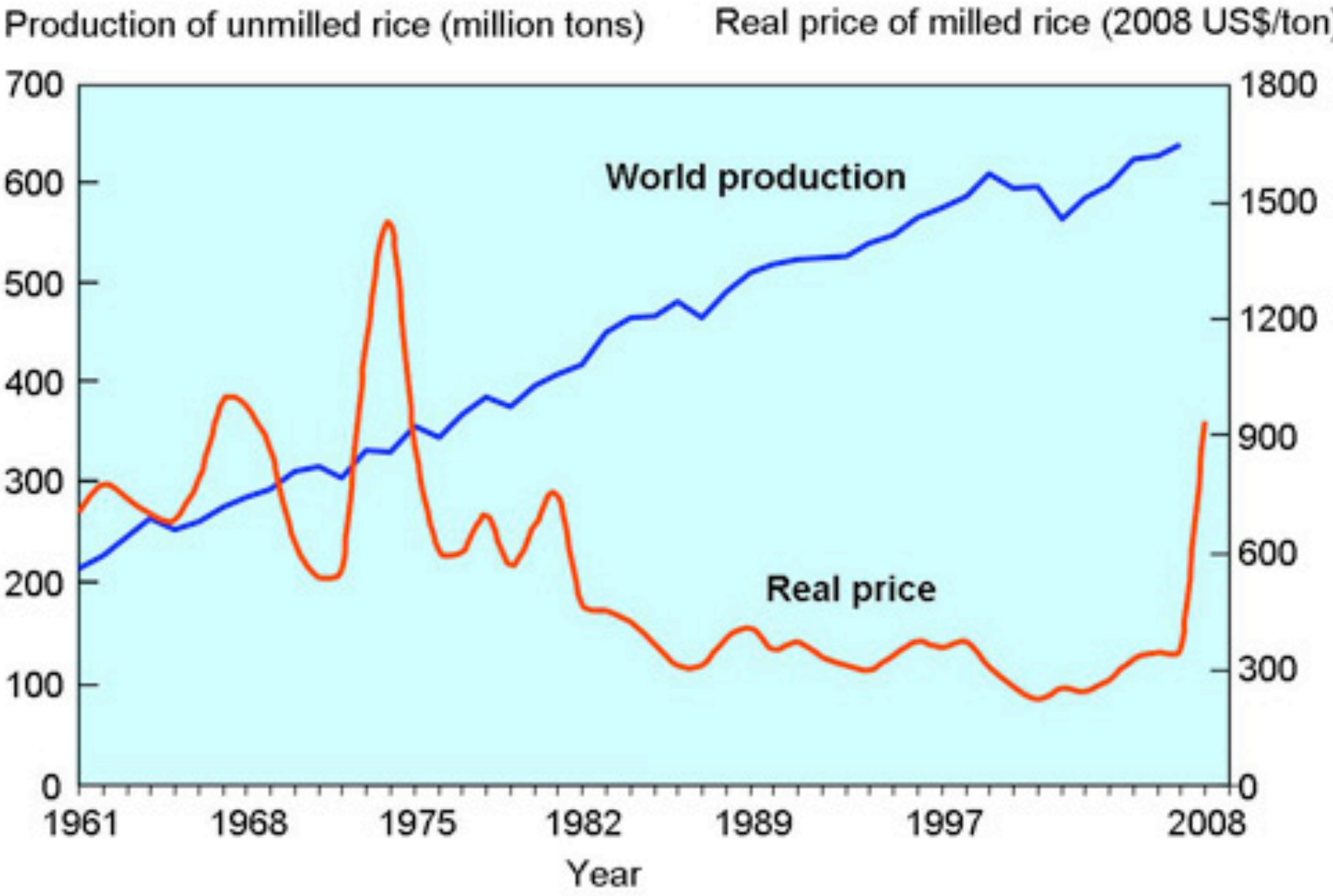

Source: Production: USDA, 13May2008
Rice Price: 2008 is May 2008 price. Relate to Thai rice 5%-broken deflated by G-5 MUV Index deflator
(adjusted based on April 17, 2008 data update)
Source: www.worldbank.org

Impact of Asia's Green Revolution

- Increasing productivity of agriculture though use of improved technology, supportive policies and institutions, and public investment
- Household food security and surpluses for sale
- Lower food prices for consumers and higher real wage rates for rural and urban workers
- Cereal production more than doubled in Asia bet 1970 and 1995
- Poverty declined from 50% to 18% between 70s and 2004; hunger declined from 30% to 16%
- Crisis averted and created the foundation for economic transformation and growth in Asia

But there are criticisms

- Negative environmental impacts: increased use of pesticides and fertilizers
- Inequitable benefits: farm size, landless, irrigated versus rain-fed, intra-household distribution
- Declining profitability as productivity increased
- Grain quality/taste
- Political/ideological arguments of increased economic dependency on multi-nationals

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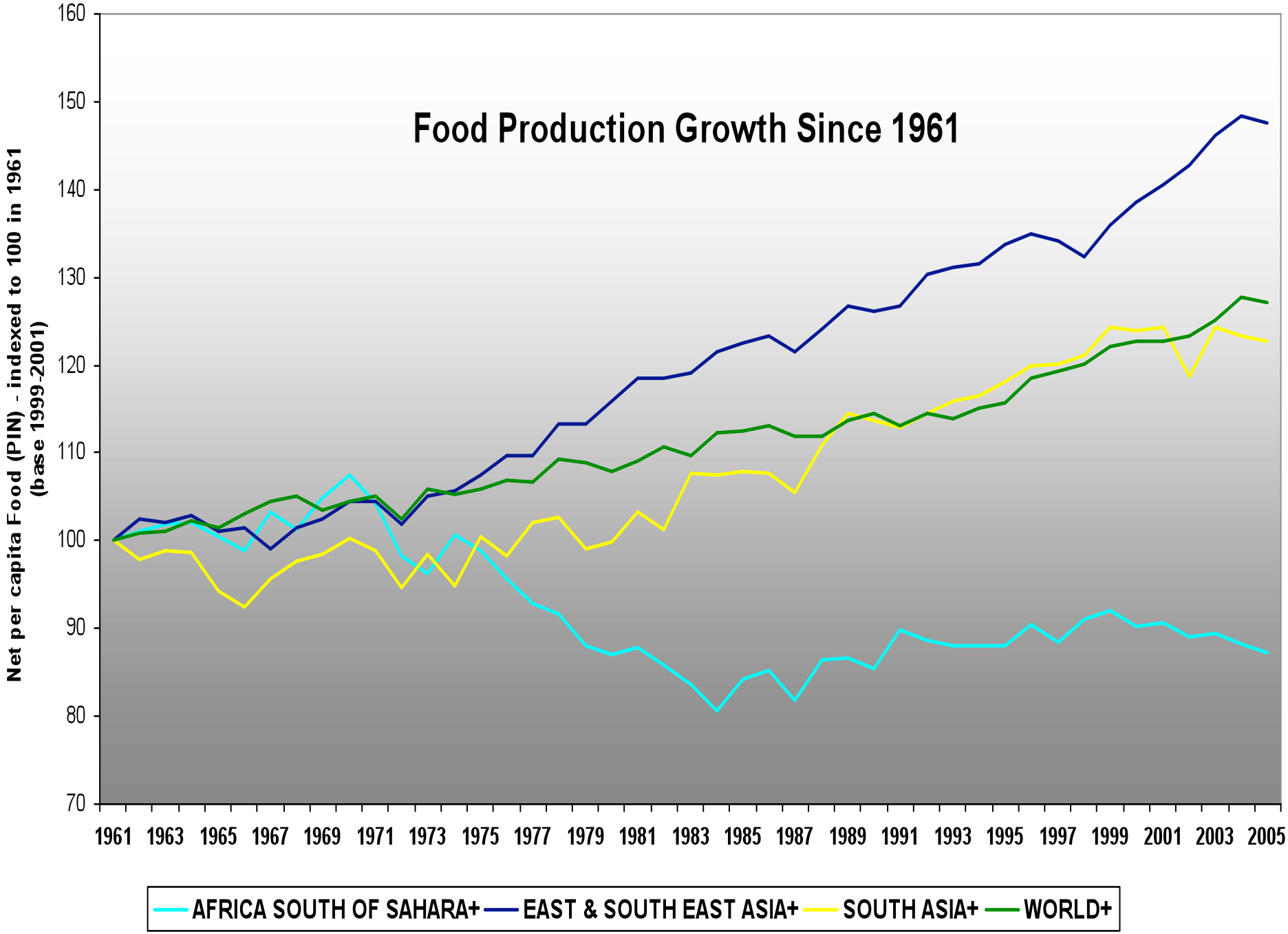
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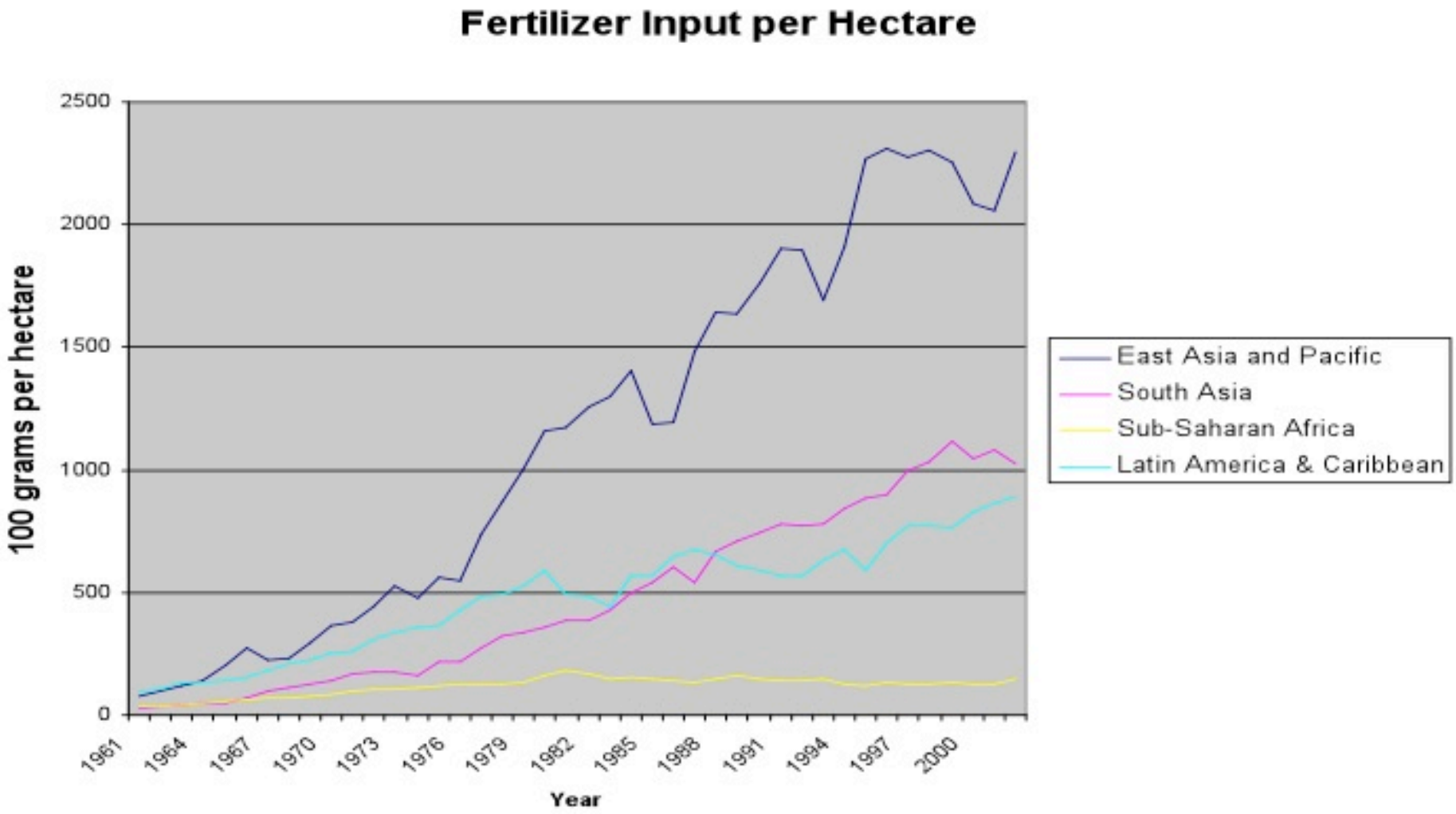
Why did the Green Revolution not reach Africa?

- Diversity of African agriculture
- Rice and wheat not important crops
- African crop land is 96% rain-fed
- Health burden, especially malaria
- Poor transport infrastructure
- Low population densities
- Political instability and urban bias
- Structural adjustment and failure of market to develop
- Lack of investment by governments and donors (WB)



World Bank World Development Indicators

A Short History of the African Green Revolution - 1

- False starts in Kenya and Zimbabwe
- Achieving MDG 1 – UN Millennium Project Hunger Task Force Report
- Kofi Annan's call for a "uniquely African Green Revolution" (5th July 2004)
- Malawi doubles maize in 2006 through an innovative inputs subsidy program
- Africa fertilizer summit, Abuja 2006
- Alliance for a Green Revolution in Africa (AGRA) formed in 2007
- Business interest expands: Yara Prize; World Economic Forum

A Short History of the African Green Revolution - 2

- World Bank declared agriculture a top priority (WDR 2008)
- UN MDG Africa Steering Group endorsed plans to support an African Green Revolution (10th March 2008)
- Madrid High Level Meeting (January 2009)
- US Government interest in addressing food security through smallholders
- L'Aquila declaration

L'Aquila Declaration

endorsed by the G8, other governments, African Union, UN, World Bank, and many others

- We, Heads of State, Government and International and Regional Organizations convened in L'Aquila, remain **deeply concerned about global food security**, the impact of the global financial and economic crisis and last year's spike in food prices on the countries least able to respond to increased hunger and poverty.
- There is an **urgent need for decisive action** to free humankind from hunger and poverty. Food security, nutrition and sustainable agriculture must remain a priority issue on the political agenda
- We therefore **agree to act with the scale and urgency needed** to achieve sustainable global food security.
- We will **aim at substantially increasing aid to agriculture and food security** including through **multiyear resource commitments**. In this respect, we welcome the commitments made by countries represented at L'Aquila towards a goal of mobilizing **$20 billion over three years** through this coordinated, comprehensive strategy focused on sustainable agriculture development

Science Strategy Behind the African Green Revolution: Work in Progress

- Address soil fertility: requires a combination of inorganic and organic nutrient sources
- Increase irrigation (blue water) and improve rainfed water capture and management (green water)
- Develop and adapt varieties for African conditions
- Include livestock and trees in the mix
- Build in adaptation to climate change
- Build in recognition that women do most of the farming
- Build in recognition that on-farm production is an important source of nutrition
- Take a more holistic integrated multi-sectoral approach: Millennium Villages

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The Threat of Climate Change

- IPCC Fourth Assessment Report
- High dependence on agriculture for food security and livelihoods; most of the poor are in rural areas
- Africa considered highly vulnerable to climate change and variability: “multiple stresses”, weak adaptive capacity
- Agriculture affected by reduced growing seasons that shift the boundaries of marginal farming
- Rainfed crop yields down by 50% in some countries
- 75-250 million Africans face increased water stress by 2020; arid and semi-arid areas to expand
- Critical disease interactions – malaria likely to get worse

Conclusion: Centrality of agriculture means that African livelihoods and economies are highly vulnerable to climate change

Broader Policy Implications for African Agriculture

- Opportunities exist for both adaptation and mitigation – but priority for action in Africa on adaptation
- Redouble efforts to improve agricultural productivity in *all* major environments
- More favorable areas are critical for national and regional food security
- Less favorable areas are most vulnerable to shocks…people living on the margin
- Partnerships to exploit the synergies within and beyond agriculture…not just about agriculture

Investing in Adaptation: Some Practical Solutions

- Intensification of food crop production by smallholders: improved access to inputs (seed, fertilizer, water)
- Shifts in crop and varietal selection towards greater drought/temperature tolerance and pest and disease resistance (CGIAR/AGRA)
- Grain storage improvements to ensure carryover stocks and access to surpluses
- Enterprise diversification towards higher value products and off-farm employment
- Water harvesting and better water management
- Forecasting and timely advice
- Weather-related insurance

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Improving Smallholder Maize Productivity in Malawi

- 78% labor force in agriculture sector
- 2.5 million smallholders, average cultivated land 1 ha
- Maize (rainfed) grown and consumed by 97% farming households
- Contributes 60% total calories
- Maize-producing households operate at sub-subsistence level
- National yields averaged 1.2 MT/ha over past 20 years
- Soil nutrients depleted, especially N

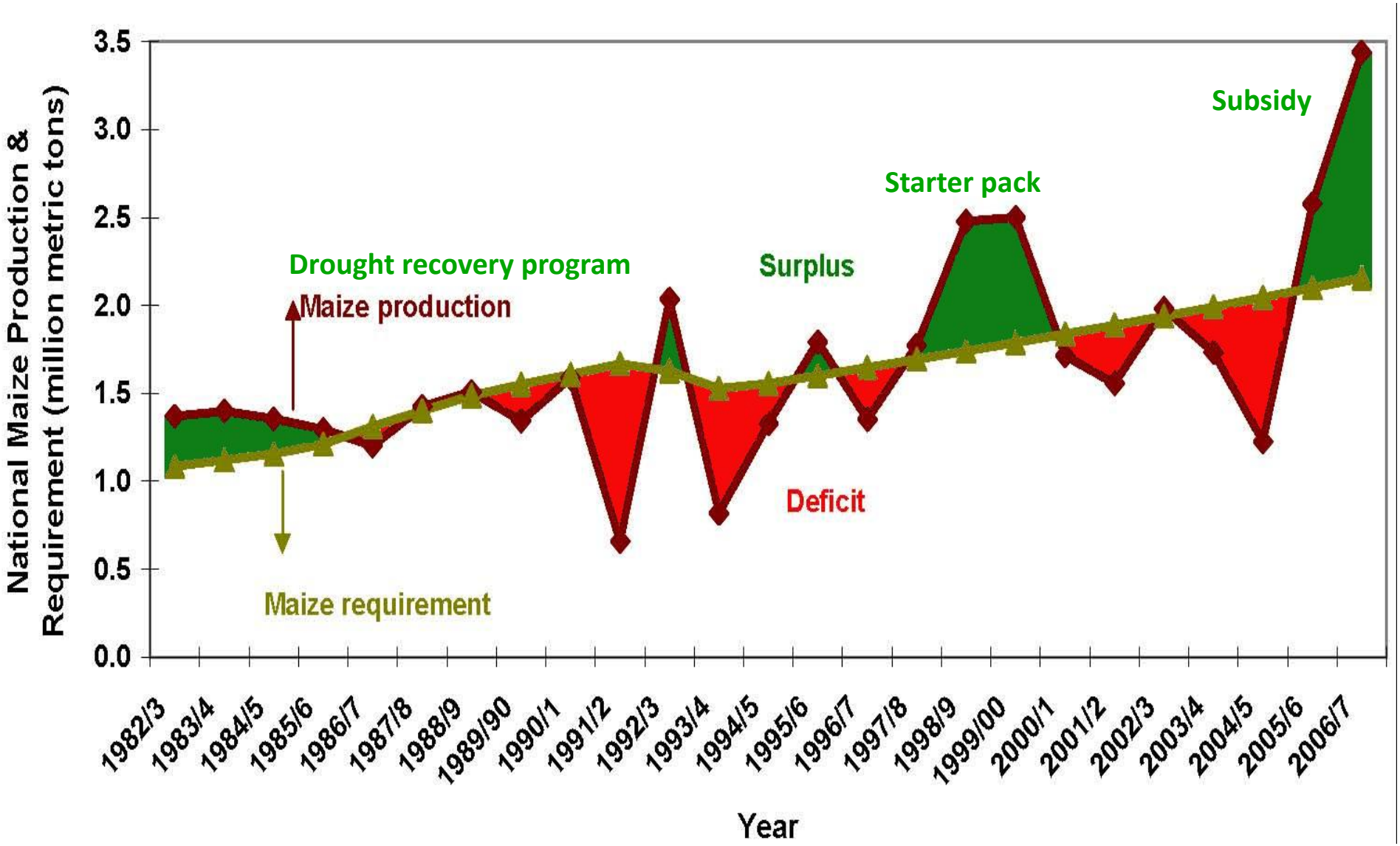
Malawi Takes Action!

- Failure of 2004/5 rains and delayed inputs…the worst maize harvest in 10 years
- Aug 2005, Government requested donor support for inputs; UN Appeal for food aid and inputs
- Donors unresponsive on inputs
- Government reallocated $60 million for an inputs subsidy program
- Voucher system enabling smallholders to access seed and fertilizer
- Repeated for 4 successive years…

4 successive bumper harvests

- 2009 saw a 1.3 million ton surplus

Meeting National Requirements



Broader impact

- Increased national food security
- Greatly reduced level of household food insecurity (down from 5 mil to 500,000 at risk)
- Higher wage rates (up 50%) and lower maize prices
- Increased local economic activity
- Better health, higher school attendance
- Export earnings
- Social and political stability

Lessons

- Political leadership and action -- grounded in strong science -- make a difference
- Knowledge already exists to increase maize productivity and to achieve food security
- National scale implementation is feasible
- Input subsidies were expensive but necessary
- Consumers are benefiting from *relatively* lower food prices; buffered from the food riots
- Donors and other countries now rethinking their strategies based on Malawi's experience with *smart subsidies*

Remaining Challenges for the African Green Revolution

- Rainfall variability and climate change
- Soil fertility management: organic/inorganic
- Post-harvest losses
- Diversification to higher value crops
- Research capacity
- Financing

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Outlook for Global Food Security

- Widely shared view that hunger and malnutrition are getting worse and need urgent attention
- More than 1 billion people chronically undernourished (100 million more than in 2008)
- Setting of volatile food and energy prices…resumption of growth may mean higher energy, fertilizer and food prices
- Formal ODA commitments substantial since the Rome Food Summit but no evidence of impact or even disbursement on the ground
- Food aid and safety nets needed for the most vulnerable
- Many countries have sound but unfunded plans to improve agricultural productivity and food security
- Existing mechanisms for approval, disbursement and delivery of ODA are not simply working
- New approaches and even new mechanisms are needed in times of crisis: Global Fund for Smallholder Agriculture

Dr. Norman Borlaug
Nobel Peace Prize Laureate 1970

Dr. Norman Borlaug in December, 2005. [Photo Bill Ganzel]

The potential is there, but you can't eat potential!